EPA comments on the Draft Ecological Risk Assessment Workplan
Columbia Falls Aluminum Company Superfund Site
Columbia Falls, Montana
Prepared for Columbia Falls Aluminum Company, LLC
Prepared by EHS Support LLC
Dated November 17, 2017

The comments below are intended to provide clarification on how the baseline ecological risk assessment (BERA) will be conducted, as well as suggestions for types of information that would be helpful to include in the workplan so that consensus may be reached on critical components of the BERA.

Specific Comments

Section 1.0 (Page 1) – Please add "Superfund" when first mentioning the Site name.

Section 3.1 (Page 10) – It is inappropriate to include comparisons of dioxin and furan levels to U.S. Environmental Protection Agency (USEPA) Regional Screening Levels (RSLs) in a BERA workplan. Remove these comparisons and discussion.

Section 3.3.5 (Page 16) – The table summarizing semi-aquatic surrogate receptors does not include an avian insectivore. Please add a surrogate an avian receptor representing this feeding guild.

Section 3.3.5 (Page 16) – There is discussion of threatened species and proposed threatened species, however, follow-up discussion is needed to state how this information is going to be used in the BERA. Please include information to describe how the BERA risk characterization for threatened species will differ from non-threatened species.

Section 3.3.6 (Page 17) – The "Ecotoxicity of Constituent of Potential Concern" discussion is very thorough and includes many studies. Please provide conclusion statements for each section stating how this information will be used in the BERA.

Section 3.4 (Page 21) – Chemicals of potential ecological concern (COPECs) retained in the screening-level ecological risk assessment (SLERA) due to inadequate method detection limits (MDLs) or those lacking ecological screening values (ESVs) should be evaluated in the BERA as part of the uncertainty evaluation. As stated in *The Role of Screening-Level Risk Assessments and Refining Contaminants of Concern in Baseline Ecological Risk Assessments* (EPA 2001), "*If, for example, the SLERA indicates that adverse ecological effects are possible at environmental concentrations below standard quantitation limits, a "non-detect" based on those limits cannot be used as the sole basis for a "no risk" decision*". Additional basis for a "no risk" decision would include an evaluation of MDL adequacy for those chemicals where analytical results were non-detect to ensure the MDLs are low enough to support ecological risk management decision making. The BERA must also include a comparison of chemical concentrations in Site media versus background for those chemicals without ESVs.

Section 3.4 (Page 22) – As discussed in EPA (2001), re-screening chemicals based on refined ESVs for the purposes of refining the list of COPECs may be appropriate for the BERA, but does not

belong in this stage of the risk assessment process (i.e., the BERA workplan). Please revise the workplan accordingly.

Section 3.4 (Page 22) – While it may be appropriate to consider background concentrations in the BERA to determine if risks are Site-related, a suitable background dataset and adequate characterization of the variability of Site conditions has not been completed. As stated in EPA (2001), "*It is important to note that this guidance adopts the presumption that all data used in the SLERA are of adequate quantity and quality, and if data deficiencies are identified, either further data collection will be undertaken or other means employed to more fully characterize exposures (e.g., fate and transport modeling).*" As stated in Section 4.1 of the workplan, "*The number and distribution of sampling stations within aquatic and transitional exposure areas in the Phase I Site Characterization were considered adequate for the purposes of the SLERA; however, the spatial representativeness of soil samples to characterize exposure was considered insufficient in some terrestrial exposure areas. Due to the limited spatial distribution of soil data, insufficient data were available to screen and eliminate exposure areas from further consideration.*" EPA (2001) also states that "*[c]onsideration of background assumes that background contaminant levels have been properly determined.*" Section 4.1 of the workplan concludes that additional characterization of background conditions is needed to support the BERA Because it has been recognized that a robust background dataset is needed, it is not appropriate to eliminate COPECs in the BERA workplan using the existing background dataset.

Section 3.4 (Page 22) –Essential nutrients may be excluded in the BERA if it can be demonstrated that Site concentrations are less than ecological screening values (ESVs) and/or equal to or less than background. Because an adequate background dataset is not currently available, it is not appropriate to include this evaluation in the BERA workplan.

Section 4.1 (Page 31) – The SLERA data gap analysis does not include collection of data in support of lines of evidence beyond a hazard quotient (HQ) evaluation. It is suggested that other lines of evidence be included in the Phase II Characterization SAP and prior to the Tier 3 analysis. These other lines of evidence may include toxicity testing, population evaluation, and habitat evaluation.

Section 4.2.1 (Page 33) – Revise the workplan to include a discussion of the temporal adequacy of the data available for the BERA. Recognizing that groundwater discharges to the Flathead River, and it has been noted that groundwater fluctuates seasonally, having only one sample of surface water at a location for each season is not adequate for characterization of potential long-term effects to aquatic receptors.

Section 4.2.1 (Page 33) - It is suggested that additional surface water and sediment data be collected to address uncertainties associated with temporal variability in surface water and sediment concentrations. Further, the following statement, "Phase I Site Characterization sediment and surface water data was considered adequate to characterize aquatic and transitional habitat in the SLERA" should be removed unless the temporal adequacy of the data can be demonstrated.

Section 4.2.1.2 (Page 34) – The assumption that exposure to burrowing mammals at depths greater than two feet is not significant relative to the zero to two-foot interval requires clarification and justification. The first full paragraph on page 34 is unclear regarding ingestion of burrowing mammals. If this statement is based on the presumption that the majority of the contamination is

present in the zero to two-foot interval, then this needs to be demonstrated. If this is based on the presumption that the majority of soil ingestion by burrowing mammals occurs in the zero to two-foot interval, then a citation is needed to justify this statement. Please clarify the intent of this information and provide justification as appropriate.

Section 4.2.2.1 (Page 35) – The workplan only discusses surface water exposures for aquatic receptors; there is no discussion of how water ingestion exposures will be evaluated for wildlife. Revise the workplan to include a discussion of wildlife exposures to surface water. For aquatic receptors, it is appropriate to evaluate exposure using the dissolved concentration, however, for wildlife surface water ingestion, the total recoverable concentration should be used.

Section 4.2.3 (Page 38) – The proposed delay in collecting additional background data until the BERA is completed is inappropriate. If risks are above a level of concern, the BERA will need to have a background evaluation to provide a frame of reference for Site risks and inform risk management decisions about whether risks are Site-related. It is highly unlikely that HQ estimates in the BERA will below a level of concern for all receptors for all COPECs; therefore, background data will likely be needed for the BERA, which means they should be collected now (before the BERA).

Section 5.1.1.2 (Page 41) – The workplan indicates that "*[f]or these hardness-dependent metals, effects endpoints will be based on the geometric mean of spatially and temporally-paired hardness measurements. Hardness values from each exposure area for a given sampling event will be pooled and the geometric mean hardness value will be used in the calculation of hardness dependent criteria for metals.*" However, the preferred approach is to use sample-specific hardness measurements for calculating a sample-specific hardness-based criteria. If sample-specific hardness measurements have not been collected, then the proposed strategy may be employed. Please revise the workplan accordingly. The uncertainties associated with the use of hardness data that is not sample-specific should be discussed in the BERA.

Section 5.1.2 (Page 43) – Please add TechLaw (2008) to the list of dose-based TRV sources for low observed adverse effect level (LOAEL) values. This is a global comment.

Section 5.2.1 (Page 44) – Because the variability of the incremental sampling methodology (ISM) dataset for an exposure unit is unknown, the 95UCL on the mean should be based on the Chebyshev upper confidence limit (UCL) per Interstate Technology Regulatory Council (ITRC) ISM guidance (ITRC 2012).

Section 5.2.3.2 (Page 45) – Please include a summary of the dietary exposure parameters for each surrogate receptor.

Section 5.2.3.2 (Page 46) – Please include a summary of the uptake models that will be selected to estimate dietary item tissue concentrations.

Section 5.4 (Page 47) – Uncertainties associated with the representativeness of the data, exposure pathways not evaluated, chemicals not detected, absence of toxicity data, the interaction of chemicals, and the use of only one line of evidence (if the HQ approach is the only line of evidence evaluated) should be included in the BERA uncertainty assessment.

Section 5.6 (Page 48) - Recognizing that it is unlikely that an HQ evaluation will result in no predicted risks, additional lines of evidence (e.g., population studies, toxicity tests, habitat evaluations) should be considered in the Phase II sampling so that the BERA summary and conclusions can be strengthened prior to Tier 3.

Figures

Figure 4 through Figure 6: The open circles used in the figures represent a combination of potential exposure pathways that are likely insignificant or not quantifiable. Please modify these figures to use two different symbols, so that it is clear which pathways are likely insignificant and which are not quantifiable.

Figure 6: Terrestrial birds and mammals may be exposed via ingestion of Site surface water, yet the presentation does not include this exposure scenario. Please modify this figure to include this exposure scenario.

Figure 5 and Figure 6: These figures show there are no complete pathways for wildlife exposures to subsurface soil. The workplan appears to be internally inconsistent with regard to the presence of burrowing mammals at the Site. As noted in a previous comment, further justification is needed to support the absence of subsurface soil exposures by burrowing mammals.

References

ITRC (Interstate Technology Regulatory Council). 2012. Incremental Sampling Methodology. Prepared by the IRC ISM Team. February.

TechLaw, Inc. 2008. Close-out Letter for Calculating Effect-based Ecological Soil Screening Levels for Fort Devens Ayers, MA. Memorandum from Stan Pauwels (TechLaw) to Bart Hoskins (EPA Region I) dated November 18, 2008. TDF No. 1216, Task Order No. 26, Task No. 01.

USEPA. (2001a). The Role of Screening-Level Risk Assessments and Refining Contaminants of Concern in Baseline Ecological Risk Assessments. USEPA ECO Update. Publication 9345.0–14. June 2001.